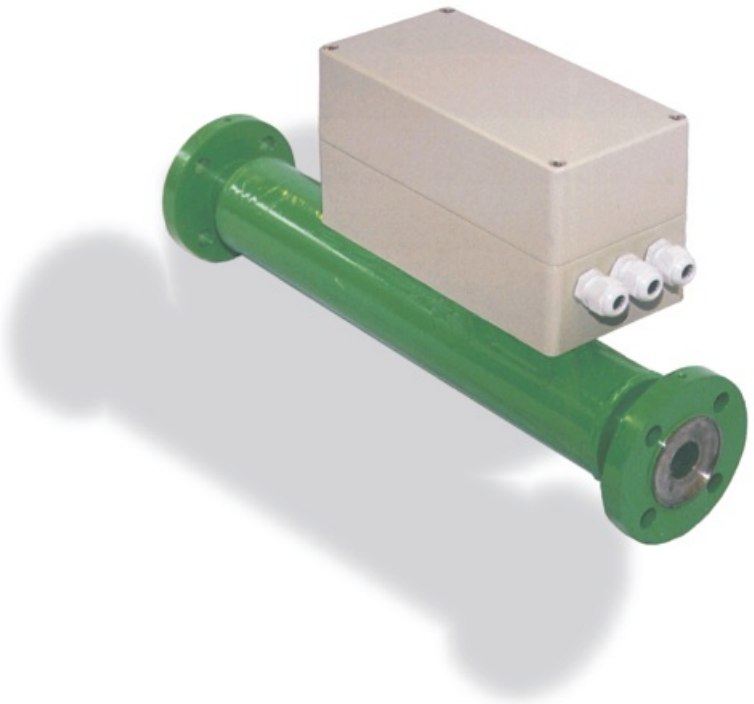
Cabloc

Flow Meters

for pneumatic conveying

Product information



Capacitive
measurement of mass density

Capacitive - correlative
measurement of velocity

CAN - Bus
for transmission of all measured values

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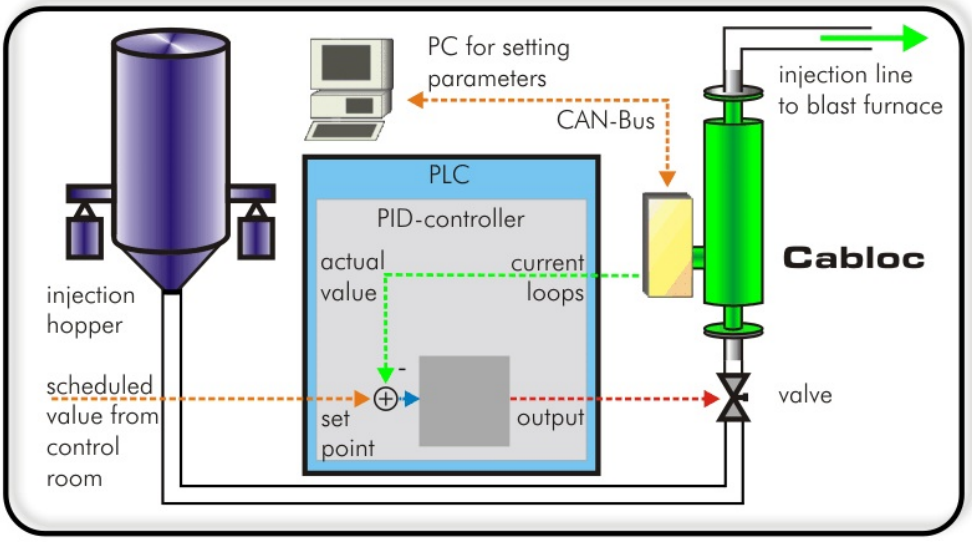
Cabloc - Flow Meters

• Introduction

The significance of coal injection is vastly rising in today's steel production business. The aim is to replace as much coke as possible by injecting coal dust into the blast furnace. Environmental concerns on coke production and the increasing market price for coke accelerate this development.
PCI systems using a static distribution of the injected coal present a technique that keeps down investment costs. But the deviation among the separate injection lines is rather high and can lead to serious problems within the blast furnace if the deviation remains undetected for longer periods of time.
Only by individual metering and control of each injection line a reliable and long-term stable equal distribution of injected coal can be established.
Cabloc flow meters measure the flow rate of every single injection line fast and precisely. By feeding this measured value into the flow control the deviation can be minimized and the injection rate can be increased.

• Controlled PCI system with CABLOC flow meters



• Utilisation

Cabloc flow meters are used for flow measurement of pneumatically conveyed material, especially in PCI installations at blast furnaces, non-ferrous furnaces and combustion facilities.

Besides coal dust the applied materials are e.g.:

- dusts from filter installations
- ground ores
- pre-reduced intermediate products
- plastics

The flow meters will be delivered pre-adjusted to the different electrical properties of the applied material.
Even the flow of electrically conductive materials can be determined.
Cabloc flow meters are used by customers from various sectors of industry world wide.

• Function

The dust concentration present in the transportation line is measured capacitively. The velocity of the particles is determined capacitive-correlatively. From the product of this two measured values, the geometric properties of the conveying line and the material dependent calibration factors the mass flow is calculated.
Multiple logical systems in every **Cabloc** device carry out the entire processing of the measured values.
The velocity and the pressure of the conveying gas are of no influence to the result of the measurement.

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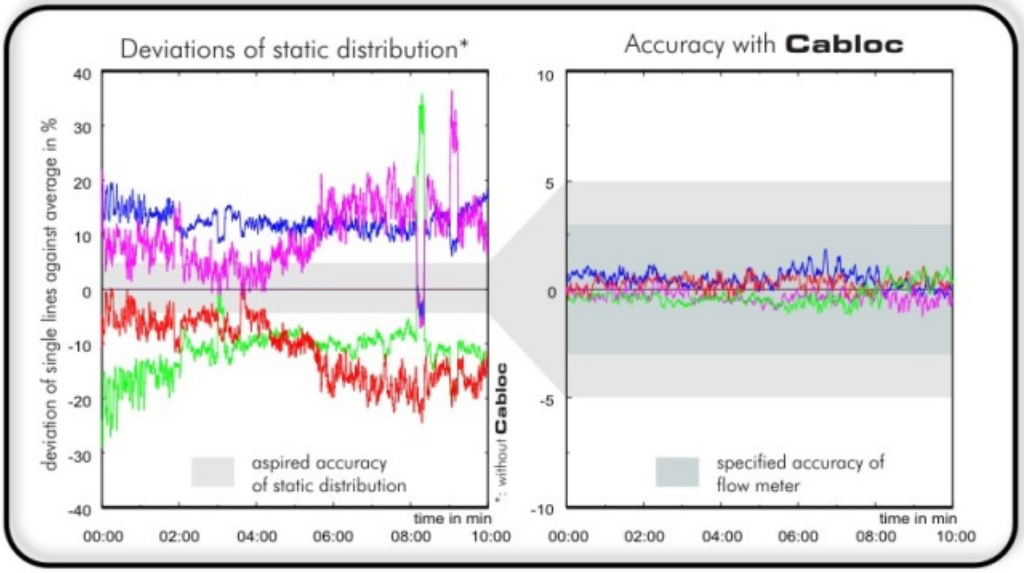

• Static distribution vs. individual metering with Cabloc

• Calibration and configuration

The flow meters are calibrated and configured by means of a control PC equipped with a CAN-Bus adapter. This way up to 255 **Cabloc** flow meters in an installation can be administered centrally.
The flow meters are calibrated for equal flow reading from the factory.
If the purpose intended by the user is only to distribute material to several lines equally no additional calibration is needed. If the exact mass flow is to be determined, at least one calibration procedure must be carried out with the material used.
Automatic recalibration that utilizes a signal from a balance as feedback is available as an option. With this option the system will adapt to varying material characteristics automatically.

• Output of measured values

- Output of the mass flow and, optionally, material velocity and material concentration via active, ground-free 4 - 20 mA current loops
- Central parameterisation and additional output of measured values via CAN-Bus (twisted pair cable)
- Graphic evaluation of the data with **Cabloc**/Graph (PC software)

• Mechanical construction

Cabloc flow meters are build for heavy duty usage.
A casing made of cast aluminium houses the electronics and protects them against mechanical damage and environmental influences according protection class IP 65.
All electronic circuit boards are located inside the casing mounted on the flow meter.
The units operate stand alone.
No additional electronic cabinets or racks are required.
The units comply to the directives 94/9/EG and 97/23/EG for pressure equipment and explosion protection.

• Electrical requirements

- Operating voltage 24 V DC (+/– 20 %)
- Maximum power consumption 20 Watts

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• Options and accessories

- Additional current loops for permanent output of conveying velocity and material concentration
- Visual indication of mass flow at the flow meter
- Routing of all electrical connections via a single 10 contact plug mounted on the outside of the electronics housing, enabling the user to disconnect individual devices without disrupting the bus (factory default for series **Cabloc** W)
- Power supplies / voltage converters for supplying the flow meters from sources different from 24 V DC
- Welding neck flanges matching the flanges on the **Cabloc** flow meter

• Model chart

as of: 06/2004

Standard models

- Flanges according to DIN EN 1092-1
- Standard models have a retracted flange on inlet and a projected flange on outlet
- Projected- / retracted flanges according to type E / type F

type	inner diameter	length
Cabloc 15	← corresponds to the number behind the type designation in millimeters	500 mm
Cabloc 17		500 mm
Cabloc 25		500 mm
Cabloc 32		500 mm
Cabloc 40		500 mm
Cabloc 73		500 mm
Cabloc 80		500 mm
Cabloc 100		750 mm
Cabloc 125		750 mm

Models series "R": retracted flanges on *both* sides

! For flow meters with different inner diameters or flanges meeting customer´s specification please inquire.

Standard models for abrasive materials

- Flange on inlet: DIN EN 1092-1 type F or hose connection
- Flange on outlet: DIN EN 1092-1 type F or hose connection

type	inner diameter	length
Cabloc 25 W	25 mm	500 mm
Cabloc 32 W	32 mm	500 mm

The models marked "W" feature an inner tube for protection of the measurering tube. This tube can be replaced by the user if worn.

! For flow meters with different inner diameters or flanges meeting customer´s specification please inquire.

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